

Top 10 Pitfalls in Economic Capital Modeling

This month's ERisk Report looks at key pitfalls in the "planning", "quantification" and "rollout" stages of any new economic capital program

Economic capital programs, once the preserve of major banks that could invest heavily in research and call on the long-term assistance of high-end consulting firms, are being adopted by an increasing number of mid-size banks – prompted by regulatory guidance and competitive pressures.

This is a positive industry trend, but it is exacerbating some of the common pitfalls ERisk has seen banks fall into when implementing economic capital. Figure 1 summarizes the Top 10 pitfalls in terms of the three key stages of implementation – now let's look at some solutions ERisk has identified as we've helped over 25 firms set up economic capital programs over the past few years.

■ Pitfall 1 – Allowing regulatory compliance to drive your program

In recent years, regulatory bodies have issued guidance that requires certain banks to implement economic capital, eg, Fed SR 99-18, OCC 2001-6a, Pillar II of Basel II. While heartening, the regulatory advocacy of economic capital can mislead banks into setting up economic capital frameworks for the sole purpose of compliance. This not only undermines the regulatory intent but turns economic capital calculations – originally devised by the major banks to help them run their

businesses better – into yet another regulatory expense.

Banks shouldn't over-focus on regulatory applications or, even, capital adequacy. Instead, they should immediately use the results of economic capital analysis to throw light on areas such as risk-based pricing or the potential use of credit derivatives to optimize portfolios. They should also link the introduction of an economic capital framework to the full rollout of at least one immediate business goal such as improved economic capital-based limit setting, or improved loss reserving.

They should also set medium-term milestones for applying the new information to improve all their management information, from risk-adjusted business profitability to credit process efficiency.

■ Pitfall 2 – Lack of a real champion within the bank

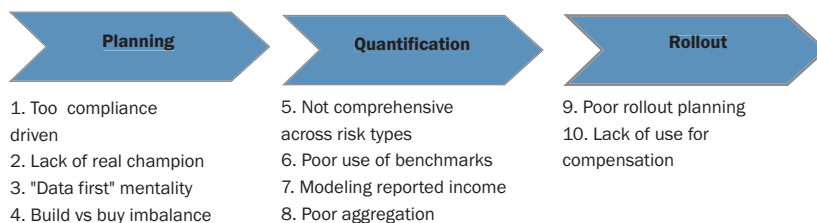
Economic capital calculations change the way that top executives measure profitability in their bank, so some business leaders will have an interest in ensuring the model remains on the shelf! Economic capital models may not be perfect – every model is simply an approximation of reality – but they are always a better guide to value creation than existing bank performance measures such as growth, earnings

and return-on-assets numbers. A senior sponsor is necessary to make sure everyone supports the wider process of changing bank behavior. Senior sponsors also need to understand the rationale behind the model so that they can instill confidence in third parties (rating agencies, regulators).

■ Pitfall 3 – "Data first" mentality

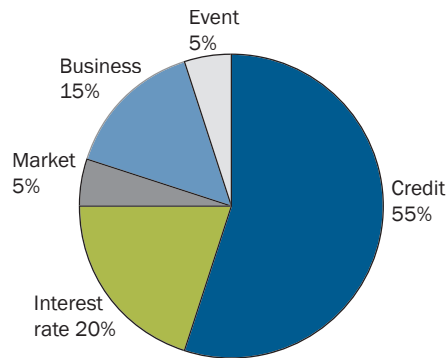
A common early objection to an ambitious economic capital program is that "we don't have the right data". Often, banks with this

Figure 1: Top 10 pitfalls in economic capital modeling



Top 10 Pitfalls in Economic Capital Modeling (continued)

Figure 2: Credit risk is not the only risk...



Illustrative only – typical regional bank

mindset never start the modeling process (no bank ever has perfect data), or they spend an enormous amount of money on a data warehouse that is often not set up to capture the correct data. A much better strategy is to improve data in parallel with a program of model development. For example, to get started, banks should plug data holes with best-effort benchmarks and use available data in an intelligent way, eg, “triangulating” towards an answer by using multiple methodologies, taking note of confidence intervals, and adjusting for economic cycles.

Where business lines are concerned that a parameter might be unfair, they can be challenged to come up with the data to improve the model. Banks that allow their economic capital model to direct their data gathering can even turn a lack of data to their advantage in the medium term.

■ Pitfall 4 – Getting the right balance on “build versus buy”

These days, not much economic capital methodology is proprietary and much has been published on the different models, so banks that do their homework can build a model on their own. Unfortunately, the do-it-yourself tactic takes time – perhaps a year or more – after which most banks find it harder to gain internal and external buy-in to the model than if they had implemented an external model. (Business lines tend to feel that the corporate center is biased against them, and regulators feel that the bank is biased towards low capital requirements.)

ERisk has some natural self-interest here, but we think there is now an overwhelming argument that banks should license models from a tried-and-trusted external source. This allows the bank to concentrate its efforts on customizing parameters and inputs to the model and on applying the results of the model to improve business decisions and business processes.

One note of caution here: in the realm of economic capital,

licensing externally can never mean “outsourcing” because bank personnel must fully understand the mechanics of their model and how to interpret its results.

■ Pitfall 5 – Over-focusing on credit risk instead of being comprehensive

When banks go looking for economic capital models, it’s often because they are concerned about credit risk, eg, is our business too concentrated in certain industries? This can lead banks to treat superficially a range of risks outside of credit risk that account for up to 45% of overall economic capital at a “typical” regional US bank (Figure 2). These risk sources must be quantified if a bank wants to understand its overall capital requirement and compare the performance of business lines (the proportion of risk from each risk source can vary dramatically between lending and non-lending business lines). One common problem is a poor treatment of operating event risks, such as internal fraud, which require a disciplined blending of internal bank information and external data. Other banks forget to assign capital to financially-driven business risks, eg, the way interest rate volatility drives the revenue of mortgage origination units.

■ Pitfall 6 – Poor use of benchmarks

Benchmarks are a useful starting point for a best-practice economic capital model, but they must be used at the most granular level possible, and replaced with bank-specific data wherever practical as the program matures. The first step is for the bank to test the sensitivity of its economic capital model to changes in each benchmark. Figure 3 shows illustrative results for changes of 20% (colored) and 50% (extended line) in estimates of probabilities of default, credit correlations, and so on.

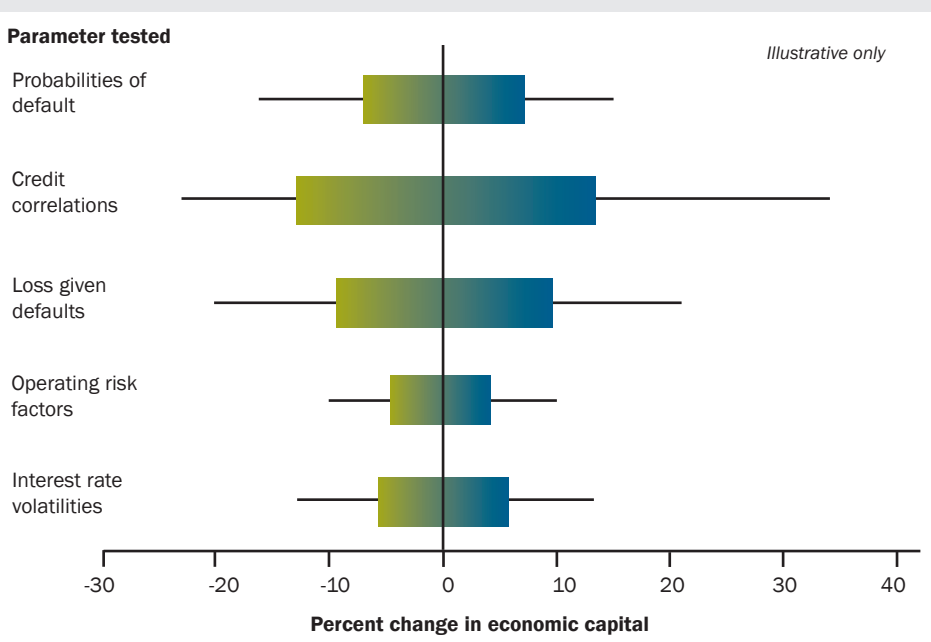
This illustrative bank should take special care about the credit correlation parameters in its economic capital model – this might mean investing in better external data. Where other parameter estimates prove the most sensitive, eg, default probabilities, banks will need to check them using internal data.

Remember, benchmarks are not created equal in terms of their granularity. It may be acceptable to apply another bank’s calibration of “loss given default to collateral type”, but using another bank’s product-level capital allocation as broad “capital factors” is not legitimate except as a sanity check on more customized results.

■ Pitfall 7 – Modeling reported income rather than economic value

Economic capital frameworks can be designed to make use of the bank’s existing risk models. However, the outputs from these models must be consistent with the standard output for

Figure 3: How sensitive to benchmark parameters is your economic capital model?



economic capital: a distribution of changes in value. This can cause problems when banks try to aggregate credit and interest rate risk because many banks still consider their interest rate risk in terms of potential changes in net interest income and are less concerned, despite regulatory prodding, with changes in the economic value of equity caused by losses occurring over several years, balance sheet impairments and restructuring charges. To solve this, banks must use changes in the economic value of equity as the interest rate risk input into the economic capital framework.

■ Pitfall 8 – Poor aggregation of risks

Even when banks measure different risks in a consistent way, they often fail to aggregate the standalone economic capital outputs for these risks accurately to arrive at an enterprise-wide economic capital number. Some banks simply add up the numbers, assuming no diversification benefits between different risk types, while others employ a covariance matrix that fails to take account of the non-normal distribution of risks such as credit and operational risk. In ERisk’s experience, the covariance matrix approach can offer distortions of as much as plus or minus 35% in risk allocations, and often exaggerates the capital requirements of particular business lines (notably commercial lending businesses).

The only real solution is to calculate a joint loss probability distribution by combining the distributions of each risk type and taking account of any correlations among them. Luckily, there are now fast, stable, numerical algorithms readily available for this purpose.

■ Pitfall 9 – Losing your balance on roll-out

Putting in place a sophisticated economic capital framework often takes as little as three months. But it takes longer to put the results of an economic capital model into action. First, the institution needs to test the model to understand what factors are driving the results and to make sure that inputs in the model are an accurate reflection of the bank. Then, as specific business applications are rolled out, senior management must explain the implications of economic capital-based management information to (sometimes hostile) business line managers. This process should be planned carefully, as rejection may set the process back years. It’s best to roll out specific applications, eg, risk-based pricing, by first proving

the approach within small “pilot” projects where volumes and margins can be monitored to ensure that nothing is moving out of kilter. Model refinement is also important: risk management personnel should test the parameters and assumptions in the model against recent bank history.

■ Pitfall 10 – Forgetting the “big red lever” of risk-adjusted incentive compensation

We think that only about 10% of banks that calculate economic capital use it to guide incentive compensation at the level of the business unit. Adapting economic capital numbers for this purpose is tricky, as it’s not always clear to top executives how they should apportion risk diversification benefits to business units. ERisk’s preferred solution is that senior executives allow business units part of the diversification benefit (to keep the numbers “real”), but filter out the effects of selected top-of-house decisions over an agreed planning horizon, so that performance assessments and bonuses of line managers vary largely according to factors within line manager control. Risk-adjusted performance assessment and bonuses should be introduced gradually, as part of a balanced scorecard, after economic capital numbers have won credibility in other areas of the business. This cautious approach is not an argument for getting cold feet: compensation is the most important lever of change that top executives have at their disposal.

This article was contributed by Brannan Johnston, Managing Director at ERisk, who welcomes your comments at bjohnston@erisk.com